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10/596,591	06/16/2006	Hyeong-Ryeol Oh	117865-001	8154
24573 K&L Gates LLP P.O. Box 1135 CHICAGO, IL 60690	7590 04/14/2009		EXAMINER SMITH, LINDA B	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

## Application No.

10/596,591

## Applicant(s)

OH ET AL.

## Examiner

LINDA B. SMITH

## Art Unit

2862

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 11 December 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) See Continuation Sheet is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1, 14-16, 25, 26, 33-40, 42-49, 82, 83, 85-87 and 92 is/are allowed.
- 6) ☒ Claim(s) 2, 50, 79, 80, 81, 84, 88-91 and 93-95 is/are rejected.
- 7) ☒ Claim(s) 6, 7, 18-23, 27-30, 42-49, 52-54, 60-66, 68, 69, 71, 72 and 74-78 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-813)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

Continuation of Disposition of Claims: Claims pending in the application are 1,2,6,7,9-11,14-16,18-23,25-30,33-40,42-50,52-54,60-66,68,69,71,72 and 74-95.

### **DETAILED ACTION**

1. Amendment A, received on 12/11/08 has been entered into record. Claims 1,2,6-7,9-11,14-15,18-19,25-27,29,33,36-37,42,47,50,52,60,66,68-69,71 and 74-75 have been amended. Claims 3-5,12,13,17,24,31,32,41,51,55-59,67,70 and 73 have been cancelled. Claims 79-95 have been added.

#### ***Claim Objections***

2. Claim 82 is objected to because of the following informalities: The claims discloses the piezoelectric element installed between the compensation lens group and the fixing part and further in the claim "a fixing part for supporting the focus actuator" is disclosed as well. The question arises as to whether the applicant is referring to 2 different fixing parts or not. The examiner would appreciate clarification of the two "fixing parts" disclosed.

Appropriate correction is required.

#### ***Allowable Subject Matter***

3. Claims 1, 82, (83 and 14-16), (85 and 25, 26), (86 and 33-40), (87 and 42-49), 92 is allowed.

4. The following is an examiner's statement of reasons for allowance:

With regard to claim 1: The prior art of record fails to disclose or suggest the claimed invention. An image photographing apparatus having a tool groove installed on the first lens barrel to insert and rotate a tool.

With regard to claim 82: The prior art of record fails to disclose or suggest the claimed invention. An image photographing apparatus comprising the focus actuator with a piezoelectric element installed between the compensation lens group and the fixing part or between the compensation lens group and the first zoom driving part.

With regard to claim 83, an image photographing apparatus with a suspension member in the focus actuator between the fixing part and focus driving part that the focus driving can be controlled to move only in driving direction of the optical axis.

With regard to claim 85, an image photographing apparatus comprises a compensating suspension member that is connected to the compensation driving part and the focus driving part to fix the compensation lens group to the focus driving part.

With regard to claim 86, an image photographing apparatus comprising a zoom actuator with a first zoom driving member that moves a compensation lens group and second zoom driving member that moves a displacement lens group and a restoration means for restoring the first and second zoom driving parts to an initial state.

With regard to claim 87, an image photographing apparatus having a zoom actuator with an assembly member for assembling the two ring-shaped magnets to have a 90 degree of phase and a first, second, third and fourth magnetic substance formed by laminating two members and having multiple upper and lower cores.

With regard to 92, an image photographing apparatus has a first restoration means for restoring the first zoom driving part and the second zoom driving part to the original state.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue

fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

5. Claims 6-7, 18-23, 27-30, 52-54, 60-66, 68-69, 71-72, 74-78 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
6. The indicated allowability of claim 79-81, 84, 88-91, 93-95 are withdrawn in view of the newly discovered reference(s) to Yoshida et al, Tsuzuki and Tomori. Rejections based on the newly cited reference(s) follow.

#### ***Response to Arguments***

7. Applicant's arguments with respect to claims 79-81, 84, 88-91, 93-95 have been considered but are moot in view of the new ground(s) of rejection.

#### ***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claim 79 is rejected under 35 U.S.C. 102(b) as being anticipated by Yumiki et al. (US Patent No. 6,456,444 and hereinafter Yumiki).
10. Claim 79 is rejected under 35 U.S.C. 103(a) as being unpatentable over
11. As to claim 79, Yumiki discloses an image photographing apparatus comprising:

a compensation lens group (**col. 2, lines 46-56 and col. 10, lines 40-48, 61-63**);

a focusing driving part for fixing the compensation lens group (**col. 7, lines 13-18 and col. 10, lines 40-48, item #2**);

a focus actuator (**item #33 or #6p and #6y**) transferring the focusing driving part to an optical axis for controlling the focus of the compensation lens group (**col. 7, lines 13-28 and col. 10, lines 49-col. 11, line 20**), the focus actuator comprising: (i) a driving coil wound on one side of the focus driving part or the first zoom driving part to be fixed, and receiving current from the controlling part (**col. 7, lines 27-34 and col. 10, lines 49-60**); and (ii) a magnet fixed to the other side of the focus driving part or the first zoom driving part (**col. 7, lines 19-23 and col. 10, lines 49-60, col. 11, lines 9-20**), wherein the polarity of the magnet is divided so that a magnetic flux passes over the flat part of the driving coil (**col. 11, lines 21-30**).

a fixing part (**34**) for supporting the focus actuator (**col. 7, lines 18-28 and col. 10, lines 44-48**);

a photographing element for photographing an image of an object passing the compensation lens group (**col. 2, lines 39-45**); and

a controlling part (**PCB**) for controlling the focus actuator and the photographing element (**col. 4, lines 39-65**).

12. Claim 81 is rejected under 35 U.S.C. 102(b) as being anticipated by Kayanuma (US Patent No. 5,140,468).

13. As to claim 81, Kayanuma discloses an image photographing apparatus comprising: a compensation lens group (**col. 2, lines 61-67**); a focusing driving part for fixing the compensation lens group (**col. 2, line 64-col. 3, line 12**); a focus actuator transferring the focusing

driving part to an optical axis for controlling the focus of the compensation lens group (**col. 4, lines 14-23**) the focus actuator comprising: (i) a driving part for receiving a power source from the controlling part to generate a dynamic force moving along the direction orthogonal to the optical axis (**col. 4, lines 3-23 and col. 4, line 57-col. 5, line 2**); and (ii) a cam part (**74,74a**) for receiving the dynamic force of the driving part to switch the dynamic force transferring the focus driving part in the direction of the optical axis (**col. 4, lines 3-23 and col. 5, lines 3-13, 37-44**); a fixing part (**74**) for supporting the focus actuator (**Fig. 1, and col. 4, lines 3-20, col. 6, lines 22-31**); a photographing element for photographing an image of an object passing the compensation lens group (**col. 2, lines 53-64**); and a controlling part (**i.e. gears**) for controlling the focus actuator and the photographing element (**col. 4, lines 14-23 and col. 6, lines 8-21**).

14. Claim 84 is rejected under 35 U.S.C. 102(b) as being anticipated by Yumiki.

15. As to claim 84, Yumiki discloses an image photographing apparatus comprising:

a compensation lens group (**col. 2, lines 46-56 and col. 10, lines 40-48, 61-63**);

a focusing driving part for fixing the compensation lens group (**col. 7, lines 13-18 and col. 10, lines 40-48, item #2**);

a focus actuator (**item #33 or #6p and #6y**) transferring the focusing driving part to an optical axis for controlling the focus of the compensation lens group (**col. 7, lines 13-28 and col. 10, lines 49-col. 11, line 20**), the focus actuator comprising: guide means (**32a,32b**) for guiding the focus driving part to be driven in the direction of the optical axis (**col. 7, lines 13-16 and Figs. 1 & 14**); a fixing part (**34**) for supporting the focus actuator (**col. 7, lines 18-28 and col. 10, lines 44-48**);



a photographing element for photographing an image of an object passing the compensation lens group (**col. 2, lines 39-45**); and

a controlling part (**PCB**) for controlling the focus actuator and the photographing element (**col. 4, lines 39-65**).

***Claim Rejections - 35 USC § 103***

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

17. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

18. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yumiki in view of Iwata et al. (US Patent No. 4,596,449 and hereinafter Iwata), and further in view of Yoshida et al. (US Patent No. 6,813,092 and hereinafter Yoshida).

19. As to claim 2, Yumiki discloses an image photographing apparatus comprising:

a compensation lens group (**col. 2, lines 46-56 and col. 10, lines 40-48, 61-63**); a focus actuator for controlling the focusing of the compensation lens group (**col. 7, lines 13-28 and col. 10, lines 49-eol. 11, line 20**); a first zoom driving part for supporting the focus actuator (**col. 7, lines 13-34**); a displacement (**45**) lens group (**col. 8, lines 54-56**); a second zoom driving part for supporting the displacement lens group (**col. 8, lines 57- 67**); a photographing element for photographing an image of an object passing the compensation lens group and the displacement lens group(**col. 2, lines 39-45**); and a controlling part (**PCB**) for controlling the focus actuator, the zoom actuator and the photographing element (**col. 4, lines 39-65**).

*Yumiki* does not expressly disclose:

the second zoom driving part comprising: (i) a third lens barrel combined with the displacement lens group in its interior and forming a second male screw on its outer circumference; and (ii) a fourth lens barrel combined with the focus actuator in its exterior and forming a second female screw, which is screw-combined with the first male screw on its inner circumference.

a zoom actuator for driving the first zoom driving part to move the compensation lens group along a first moving trajectory, which is a zoom transition part, and driving the second zoom driving part to move the displacement lens group along a second moving trajectory, which is a path of a zoom transition path.

*Iwata* discloses a zoom lens apparatus having:

a zoom actuator for driving the first zoom driving part to move the compensation lens group along a first moving trajectory, which is a zoom transition part, and driving the second

zoom driving part to move the displacement lens group along a second moving trajectory, which is a path of a zoom transition path (**col. 3, lines 65-col. 4, line 1 and col. 4, lines 40-49**).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the lens barrel of Yumiki with a single moving mechanism as taught by Iwata to make the outer appearance of the lens barrel compact in size without having to change the shape as well as reducing the cost of manufacturing by providing a simplified moving mechanism for the lens group (**col. 4, lines 53-59**).

*Yoshida* teaches a zoom lens apparatus having:

the second zoom driving part comprising: (i) a third lens barrel (**24**) combined with the displacement lens group in its interior and forming a second male screw (**24A**) on its outer circumference (**col. 2, lines 42-47, 58-64, col. 3, lines 7-15 and Fig. 1**) to provide an attachment/connection means in order to attach/connect with another lens barrel; and (ii) a fourth lens barrel (**22**) combined with the focus actuator in its exterior and forming a second female screw (**22A**), which is screw-combined with the first male screw on its inner circumference (**Fig. 1, col. 2, lines 42-57**).

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the system of Yumiki as modified by Iwata with a screw-combination mechanism as taught by Yoshida to provide another means of attaching/connecting one lens barrel to another in order to provide focus/zoom functions. As well as providing a way to reduce the camera size by collapsing the lens barrel as well as functioning to accurately position the focus.

20. Claim 50 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohkawara et al. (US Patent No. 6,356,307 and hereinafter Ohkawara).

Ohkawara discloses all the features of the instant claimed invention except for the focus driving part comprising (i) a first lens barrel combined with the compensation lens group in its interior and forming a first male screw on its outer circumference; and (ii) a second lens barrel combined with the focus actuator in its exterior and forming a first female screw, which is screw-combined with the first male screw on its inner circumference. To employ male and female screw-combination in order to join lens barrels together is well-known and recognized in the art and one having routine skill in the art would know there are multiple ways of joining the lens barrels for intended purpose and it would have been obvious to make the modification described above with a reasonable expectation of success.

21. Claim 80 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yumiki in view of Kleinert et al. (US Patent No. 6,175,291 and hereinafter Kleinert).

22. As to claim 80, Yumiki discloses an image photographing apparatus comprising:

a compensation lens group (**col. 2, lines 46-56 and col. 10, lines 40-48, 61-63**);

a focusing driving part for fixing the compensation lens group (**col. 7, lines 13-18 and col. 10, lines 40-48, item #2**);

a focus actuator (**item #33 or #6p and #6y**) transferring the focusing driving part to an optical axis for controlling the focus of the compensation lens group (**col. 7, lines 13-28 and col. 10, lines 49-col. 11, line 20**),

a fixing part (**34**) for supporting the focus actuator (**col. 7, lines 18-28 and col. 10, lines 44-48**);

a photographing element for photographing an image of an object passing the compensation lens group (**col. 2, lines 39-45**); and

a controlling part (**PCB**) for controlling the focus actuator and the photographing element (**col. 4, lines 39-65**).

*Yumiki* does not disclose:

the focus actuator comprising: a restoration spring for restoring the focus driving part to the initial position.

*Kleinert* discloses an electromagnet having:

the focus actuator comprising: a restoration spring (**5**) for restoring the focus driving part to the initial position (**col. 3, line 5-col. 4, line 3**).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the focus actuator of *Yumiki* with a restoration spring as taught by *Kleinert* to provide a means of moving the movable member (armature) back to its initial position when there is not a magnetic field being generated.

23. Claim 88 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Ohkawara et al.* (US Patent No. 6,356,307 and hereinafter *Ohkawara*) in view of *Iwata et al.* (US Patent No. 4,596,449 and hereinafter *Iwata*), and further in view of *Hirokane et al.* (US Patent No. 6,826,769 and hereinafter *Hirokane*).

24. As to claim 88, *Ohkawara* discloses an image photographing apparatus comprising: a focus lens (**105**) group (**abstract, col. 7, lines 32-42 and col. 17, lines 13-15**); a focus actuator (**120**) for adjusting the focusing of the focusing lens group; a fixing part for supporting the focus actuator; a compensation lens (**105**) group (**col. 7, lines 32-42, 54-59**); a third zoom driving part (**119**) for supporting the compensation lens group (**col. 8, lines 44-62**); a displacement lens (**102**) group (**col. 7, lines 5-10, 24-26**); a second zoom driving part (**118**) for supporting the

displacement lens group (**col. 7, lines 24-26 and col. 8, lines 48-54**); a photographing element (**106**) for photographing an object image passing the compensation lens group and the displacement lens group (**col. 7, lines 60-col. 8, line 2**); and a controller part (**115**) for controlling the focus actuator, the zoom actuator and the photographing element (**col. 8, lines 34-47, col. 9, lines 44-col. 10, line 26, Fig. 6**).

*Ohkawara* does not disclose:

a zoom actuator for driving the third zoom driving part to move the compensation lens group along the first moving trajectory, and for driving the second zoom driving part to move the displacement lens group along the second moving trajectory.

the focus actuator comprising a piezoelectric element installed between the compensation lens group and the first zoom driving part, and receiving the current from the controlling part to drive the first zoom driving part in the direction of the optical axis.

*Iwata* discloses a zoom lens apparatus having:

a zoom actuator for driving the third zoom driving part to move the compensation lens group along the first moving trajectory, and for driving the second zoom driving part to move the displacement lens group along the second moving trajectory (**col. 3, line 65-col. 4, line 1 and col. 4, lines 40-49**).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the lens barrel of Ohkawara with a zoom actuator that will move more than one lens group as taught by Iwata along different traveling paths in order to provide the correct photographing effect during image taking. This zoom actuator moving more than one lens group

will allow the camera of Yumiki as modified by Ohkawara to be compact thereby reducing manufacturing cost.

*Hirokane* disclose a recording and reproducing device having:

the focus actuator comprising a piezoelectric element (220) installed between the compensation lens group and the first zoom driving part, and receiving the current from the controlling part to drive the first zoom driving part in the direction of the optical axis (col. 35, lines 51-62 and col. 38, lines 58-67).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the apparatus of Ohkawara as modified by Iwata with a piezoelectric element as taught by Hirokane to provide a means to correct focusing errors as the compensation lens group and the first zoom driving part is moved to affect a focus movement. Furthermore, it would have been obvious to one ordinary skill in the art to provide a preferred focus actuator for the optical system since all the claimed element were known at the time of the invention and could have combined using known methods in the photographic and optical arts to achieve a predictable result of driving the first zoom driving part along the optical axis.

25. Claim 89 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohkawara.

Ohkawara discloses all the features of the instant claimed invention except for the second zoom driving part comprising: (i) a fourth lens barrel combined with the displacement lens group in its interior and forming a second male screw on its outer circumference; and (ii) a fourth lens barrel forming a second female screw, which is screw-combined with the second male screw on its inner circumference. To employ male and female screw-combination in order to join lens barrels together is well-known and recognized in the art and one having routine skill in the art

would known there are multiple ways of joining the lens barrels for intended purpose and it would have been obvious to make the modification described above with a reasonable expectation of success.

26. Claim 90 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohkawara.

Ohkawara discloses all the features of the instant claimed invention except the third zoom driving part comprising: a fifth lens barrel combined with the compensation lens group in its interior and forming a third male screw on its outer circumference; and a sixth lens barrel forming a third female screw which is screw-combined with the third mail screw. To employ male and female screw-combination in order to join lens barrels together is well-known and recognized in the art and one having routine skill in the art would known there are multiple ways of joining the lens barrels for intended purpose and it would have been obvious to make the modification described above with a reasonable expectation of success. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to duplicate the parts of the male-female screw combination on any number of lens barrels in order to join them together, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art.

27. Claim 91 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohkawara in view of Iwata.

As to claim 91, Ohkawara discloses an image photographing apparatus comprising: a focus lens (105) group (**abstract, col. 7, lines 32-42 and col. 17, lines 13-15**); a focus actuator (120) for adjusting the focusing of the focusing lens group; a fixing part for supporting the focus actuator; a compensation lens (105) group (**col. 7, lines 32-42, 54-59**); a third zoom driving part



(119) for supporting the compensation lens group (**col. 8, lines 44-62**); a displacement lens (102) group (**col. 7, lines 5-10, 24-26**); a second zoom driving part (118) for supporting the displacement lens group (**col. 7, lines 24-26 and col. 8, lines 48-54**); a photographing element (106) for photographing an object image passing the compensation lens group and the displacement lens group (**col. 7, lines 60-col. 8, line 2**); and a controller part (115) for controlling the focus actuator, the zoom actuator and the photographing element (**col. 8, lines 34-47, col. 9, lines 44-col. 10, line 26, Fig. 6**).

*Ohkawara* does not disclose:

a zoom actuator for driving the third zoom driving part to move the compensation lens group along the first moving trajectory, and for driving the second zoom driving part to move the displacement lens group along the second moving trajectory, the zoom actuator comprising: (i) an actuation source; (ii) a first zoom driving member for receiving a dynamic force from the actuation source and driving the first zoom driving part to move a compensation lens group along a first moving trajectory, which is the zoom transition path; and (iii) a second zoom driving member for receiving a dynamic force from the actuation source and driving the second zoom driving part to move the displacement lens group along a second moving trajectory, which is the zoom transition path.

*Iwata* disclose a zoom lens apparatus:

a zoom actuator for driving the third zoom driving part to move the compensation lens group along the first moving trajectory, and for driving the second zoom driving part to move the displacement lens group along the second moving trajectory, the zoom actuator comprising: (i) an actuation source (**col. 2, lines 55-63, i.e. stator and rotor, col. 4, lines 13-26**) to provide a

means to drive the zoom actuator forward and backward; (ii) a first zoom driving member for receiving a dynamic force from the actuation source and driving the first zoom driving part to move a compensation lens group (15) along a first moving trajectory (22), which is the zoom transition path (**col. 4, lines 8-12**); and (iii) a second zoom driving member for receiving a dynamic force from the actuation source and driving the second zoom driving part to move the displacement lens group (13) along a second moving trajectory (23), which is the zoom transition path (**col. 3, line 65-col. 4, line 1, 17-27 and col. 4, lines 40-49**).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the lens barrel of Ohkawara with a zoom actuator that will move more than one lens group as taught by Iwata along different traveling paths in order to provide the correct photographing effect during image taking. This zoom actuator moving more than one lens group will allow the zoom lens apparatus of Ohkawara with a moving mechanism that will allow the camera to appear move compact in size, making the structure simpler and thereby reducing manufacturing cost.

28. Claim 93 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yumiki in view of Tomori (US Patent No. 4,359,276).

29. As to claim 93, Yumiki discloses an image photographing apparatus comprising:  
a compensation lens group (**col. 2, lines 46-56 and col. 10, lines 40-48, 61-63**);  
a focusing driving part for fixing the compensation lens group (**col. 7, lines 13-18 and col. 10, lines 40-48, item #2**);

a focus actuator (**item #33 or #6p and #6y**) transferring the focusing driving part to an optical axis for controlling the focus of the compensation lens group (**col. 7, lines 13-28 and col. 10, lines 49-col. 11, line 20**),

a fixing part (**34**) for supporting the focus actuator (**col. 7, lines 18-28 and col. 10, lines 44-48**);

a photographing element for photographing an image of an object passing the compensation lens group (**col. 2, lines 39-45**); and

a controlling part (**PCB**) for controlling the focus actuator and the photographing element (**col. 4, lines 39-65**).

*Yumiki* does not disclose:

a brake device fixed to the focus driving part for controlling the driving of the focus driving part.

*Tomori* discloses interchangeable lens barrel having:

a brake device (**E1 and E2, 2P**) fixed to the focus driving part (**10**) for controlling the driving of the focus driving part (**col. 3, lines 22-26 and col. 5, lines 50-62**).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Yumiki with a means to brake or resist the movement of the focus driving part as taught by Tomori in order to limit the rotational movement of the focus driving part by producing a large resistance since the brake device can actually deformed.

30. Claim 94 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yumiki in view of Iwata and further in view of Tomori.

31. As to claim 94, Yumiki discloses an image photographing apparatus comprising:

a compensation lens group (**col. 2, lines 46-56 and col. 10, lines 40-48, 61-63**);

a focus actuator for controlling the focusing of the compensation lens group (**col. 7, lines 13-28 and col. 10, lines 49-col. 11, line 20**);

a first zoom driving part for supporting the focus actuator (**col. 7, lines 13-34**);

a displacement (**45**) lens group (**col. 8, lines 54-56**);

a second zoom driving part for supporting the displacement lens group (**col. 8, lines 57-67**);

a photographing element for photographing an image of an object passing the compensation lens group and the displacement lens group (**col. 2, lines 39-45**); and

a controlling part (PCB) for controlling the focus actuator, the zoom actuator and the photographing element (**col. 4, lines 39-65**).

*Yumiki* does not expressly disclose:

a zoom actuator for driving the first zoom driving part to move the compensation lens group along a first moving trajectory, which is a zoom transition part, and driving the second zoom driving part to move the displacement lens group along a second moving trajectory, which is a path of a zoom transition path. lens group along a second moving trajectory, which is a path of a zoom transition path.

a brake device fixed to the second zoom driving part or one of the second driving part to control the driving of the second zoom driving part or the third zoom driving part.

*Iwata* discloses a zoom lens apparatus having:

a zoom actuator for driving the first zoom driving part to move the compensation lens group along a first moving trajectory, which is a zoom transition part, and driving the second

zoom driving part to move the displacement lens group along a second moving trajectory, which is a path of a zoom transition path (**col. 3, lines 65-col. 4, line 1 and col. 4, lines 40-49**).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the lens barrel of Yumiki with a single moving mechanism as taught by Iwata to make the outer appearance of the lens barrel compact in size without having to change the shape as well as reducing the cost of manufacturing by providing a simplified moving mechanism for the lens group (**col. 4, lines 53-59**).

*Tomori* discloses interchangeable lens barrel having:

a brake device (**E1, E2, 2P**) fixed to the second zoom driving part or one of the second driving part to control the driving of the second zoom driving part or the third zoom driving part (**col. 3, lines 22-26 and col. 5, lines 34-37, 50-62**).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Yumiki as modified by Iwata with a means to brake or resist the movement of the focus driving part as taught by Tomori in order to limit the rotational movement of the focus driving part by producing a large resistance since the brake device can actually deformed. Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to move the brake device to any driving part on an optical system, since it has been held that rearranging parts of an invention involves only routine skill in the art.

32. Claim 95 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yumiki in view of Koch et al. (US Patent No. 3,956,761 and hereinafter Koch).

33. As to claim 95, Yumiki discloses all the features of the claimed invention except for a shutter device installed between the compensation lens group and the focus driving part, or

installed between the compensation lens group and the first zoom driving, thereby controlling the light quantity.

Koch teaches Shutter device for a photographic camera having:

a shutter device (**Fig. 1**) installed between the compensation lens group and the focus driving part, or installed between the compensation lens group and the first zoom driving, thereby controlling the light quantity (**col. 3, lines 33-60 and col. 9, lines 41-50**).

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the system of Yumiki with a shutter device positioned behind the lens as taught by Koch to provide even exposure on the image sensing device by putting the shutter as close to the lens as possible without departing from the intended function. The shutter device can be positioned anywhere along the optical axis, since it has been held that rearranging parts of an invention involves only routine skill in the art as long as the intended purpose of its presence is not interrupted.

#### **Prior Art Made of Record**

34. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. Yamada et al. (US Patent No. 4,623,233) discloses an electromagnetically driven shutter device.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LINDA B. SMITH whose telephone number is (571)270-3827. The examiner can normally be reached on Monday through Friday 9:00AM-6:30PM EST..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Assouad can be reached on (571) 272-2210. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Linda B Smith/  
Examiner, Art Unit 2862

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